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SARB Special Occasional Bulletin of Economic Notes August 2023

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Special OBEN 2301* – July 2023

Review of administered prices in South Africa: Water tariffs

Kim Walsh

Abstract

Water tariffs are set by each of the 144 water services authorities (WSAs) in South Africa each year. No comprehensive data set for the water tariffs in all WSAs is publicly available, so there is no way to determine the increase in water price in each WSA. Stats SA data suggest that water prices increased steadily above inflation between 2017 and 2022. The extent to which this is true will be different in each WSA. The setting of retail water tariffs by WSAs is part of the overall annual municipal budget process. Tariffs are set to achieve the revenues required to ensure an overall funded budget. This is an inherently political process. Outside of the metropolitan municipalities, few WSAs use any tool or methodology to set water tariffs; these tariffs are typically simply increased at a rate that blends the consumer price index and any increase in the bulk water tariff paid to a water board (where they are in place). Factors that have driven increases in the costs of water provision include (1) slower growth in infrastructure grants; (2) high growth in employee-related costs; (3) high growth in bulk water costs; (4) high growth in electricity costs; (5) high growth in debt impairment; and (6) high levels of non-revenue water. Rising water scarcity and historic under-investment in asset management are anticipated to be key drivers of the need to increase water prices in future. Recommendations include (1) strengthening the economic regulation of water pricing; (2) establishing a publicly accessible database for water tariffs; (3) introducing a requirement for separate financial reporting for each municipal trading service, including water; (4) providing urgent support to municipalities to contain employee-related costs; (5) municipalities reintroducing debt collection and credit control measures, accompanied by careful indigent management; and (6) containing and reducing levels of non-revenue water. Funding freed up through these interventions should be directed to improved asset management.

1. Introduction

Access to water is explicitly recognised as a human right through [Resolution 64/292](#) of the United Nations General Assembly, which states that clean drinking water and sanitation are essential to realising all human rights (De Albuquerque and Roaf 2020). If water prices increase too rapidly, they become unaffordable to customers, implicitly denying them access to their basic right to water. However, water pricing must strike a delicate balance between ensuring affordable, equitable access to water and adequately recovering costs so that services can be provided in a financially sustainable manner into the future.

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This note will discuss current mechanisms for setting water prices in South Africa and key drivers of water price inflation and will make recommendations for water pricing in future.¹ Before doing that, however, the note will discuss the complexity of determining what ‘price’ of water to compare, how water prices have changed over time in South Africa, and how that compares to price changes in other emerging markets.²

1.1 What ‘price’ to compare?

Water tariffs are set annually by 144 water services authorities (WSAs) in South Africa. New tariffs come into force on 1 July each year. A WSA may be a single municipality or may cover several municipalities. It is important to be aware that the way water tariffs are structured makes it difficult to establish a ‘price’ that is easily comparable between WSAs or over time. See the annexure for further details of this complexity.

It is also important to bear in mind that the 144 WSAs are a diverse group. Some cover only small populations and sell small volumes of water, while others cover large populations and sell large volumes of water. Price increases may differ between these WSAs. Determining an ‘average’ increase reflective of the distribution of customers served by these WSAs or the volumes of water they sell would ideally require weighting of some sort.

1.2 What has the level of inflation in water prices been?

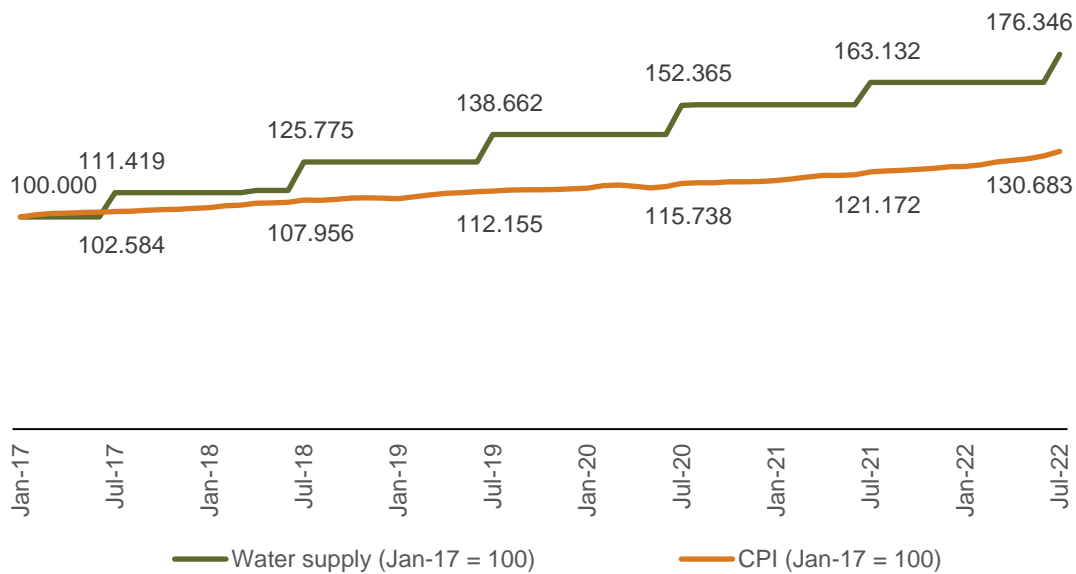
No comprehensive data set for the water tariffs in all 144 WSAs is publicly available, and there is therefore no way to determine the increase in water price in each WSA.³ Statistics South Africa (Stats SA) includes ‘water supply’ in the basket of goods used to calculate the consumer price index (CPI). Price increases are captured for metropolitan and a sample of other urban areas in each province, not for each WSA. A geometric average price is determined for each municipality for which data are gathered from budget documentation. The overall price increase in the CPI is a simple average with no weighting applied. The water supply price increase calculated according to this method is shown in Figure 1.

¹ This note focusses on water prices. Many municipalities provide water and wastewater together as a single ‘water services’ function. While wastewater tariffs are structured differently to water tariffs, the cost drivers for the two services are similar, and many municipalities will apply the same price increases to both. Much of the discussion of price-setting mechanisms and inflation drivers in this note applies to both water and wastewater.

² The Palmer Development Group has written a paper on municipal rates and taxes for this series. Sections of that paper are duplicated in this note, as many of the processes for setting water tariffs align with those for setting property rates, and several of the inflation drivers are the same.

³ WSAs should publish their water tariffs on their website, but many do not. When they are reported, they are not reported in a consistent format, and the presence of many different water tariffs for each WSA makes it difficult to compare tariffs between WSAs. As the regulator, the national Department of Water and Sanitation should collect tariff data for each WSA. These data are not publicly available, however.

Figure 1: Growth in price of water supply compared to CPI between 2017 and 2022



Source: Author's analysis of Stats SA data on water supply price and CPI.

Figure 1 shows that the water supply price has increased steadily ahead of inflation. The **average increase in the water supply price from July 2017 to July 2022, according to Stats SA, was 10.3% per year**, compared to an average CPI of 3.9% per year over the same period. As noted in the discussion in Section 1.1 and the associated annexure, water price increases have differed from WSA to WSA and also differ depending on the volume of water consumed. This is demonstrated in Table 1, which shows the average *real* increase per year (i.e. the increase in addition to inflation) in the cost of two different volumes of water for residential customers in each of the metros between 2015/16 and 2020/21.

Table 1: Average real annual increases in the price of 20 kl and 40 kl of water between 2016 and 2021 for domestic customers in each of the metropolitan municipalities

Water volume (kl per month)	20	40
Johannesburg	11.0%	6.3%
Cape Town	18.9%	9.9%
eThekweni	16.6%	9.3%
Tshwane	7.8%	6.2%
Ekurhuleni	15.0%	10.6%
Nelson Mandela Bay	5.1%	8.1%
Mangaung	4.7%	5.4%
Buffalo City	4.8%	4.8%

Source: Author's analysis of Stats SA data on water supply price and CPI.

Average real water price increases in the metros over these five years ranged from 4.7% to 18.9%, depending on the metro and the volume of water consumed. In some cases, changes in tariff structure, the introduction of fixed charges, and changes in how free basic

water is allocated have influenced increases. In most cases, the price increase was higher for customers consuming lower volumes of water. Increases have also sometimes varied between residential and other customer types. For example, eThekweni introduced a 5.9% increase in water tariffs for residential customers in July 2022 but increased commercial and industrial tariffs by 9%.⁴

1.3 How does this compare to other emerging markets?

Consistent data on emerging markets are difficult to access, but Global Water Intelligence (GWI) publishes an annual Global Water Tariff Survey covering more than 350 cities worldwide. Disaggregated data are not publicly available, but reported average increases for all cities surveyed between 2017 and 2019 ranged from 3.3% to 3.9%. There is a high degree of variability, with a sample of American water utilities showing a range of increases from 5.1% to 47.2% in 2018, for example (GWI 2018).⁵ South African tariff increases are above the average increases reported by GWI but are not out of keeping with increases reported in individual cities mentioned in the publicly available reporting.

Data in Table 2 from Yates et al. (2020) show tariff changes in several sub-Saharan cities between 2018 and 2019 that show increases of a similar magnitude to those in South Africa.

Table 2: Water tariff increases between 2018 and 2019 in a sample of cities in sub-Saharan Africa

City	Tariff increase
Kigali (Rwanda)	77.1%
Lome (Togo)	19.0%
Mbabane (eSwatini)	13.6%
Windhoek (Namibia)	9.9%
Victoria (Seychelles)	8.3%
Accra (Ghana)	8.0%
Dakar (Senegal)	7.4%
Lilongwe (Malawi)	5.0%
Harare (Zimbabwe)	-62.0%

Source: Yates et al. (2020).

⁴ These increases are taken from the eThekweni tariff book, which offers no explanation for why the increases differed for different customers.

⁵ The GWI report for 2020 found an “unprecedented number of falls in domestic water and wastewater tariffs”. Latin America and the Caribbean, Asia Pacific and sub-Saharan Africa all saw an average decrease in tariffs in this year, “mainly driven by the range of coronavirus responses introduced in these regions”. However, the Middle East and North Africa saw a 4.8% average increase between 2019 and 2020 (GWI 2020). Key drivers of tariff increases have included prolonged drought, ageing infrastructure, pressure from external investors and subsidy cuts (GWI 2018). The 2020 Global Water Tariff Survey noted the introduction of new regulations related to water pricing in several countries. Repairs, maintenance and upgrades to infrastructure were identified as key drivers of price increases in some countries, while water scarcity and climate change were significant factors in others (GWI 2020).

2. Description of current price-setting mechanism

This note focuses on the price of potable water. Potable water sits at the end of the 'water value chain' that includes the management and extraction of raw water, its treatment (referred to as the 'bulk water service') and its ultimate distribution to customers. The discussion will focus on the setting of the **retail water tariff** charged to users of potable water by WSAs. Tariffs and charges are levied at each step along the water value chain, with each feeding into the eventual retail water tariff.⁶

The setting of retail water tariffs by WSAs is part of the overall annual municipal budget process. Tariffs are set to achieve the revenues required to ensure an overall funded budget. **It is important to note that this is an inherently political process.** Technical input and recommended tariff increases are provided by municipal officials, but increases must ultimately be approved by Council and go through a process of public participation.

Water tariff processes are sometimes led by budget or revenue departments, sometimes by technical services departments and sometimes by these two departments jointly. These processes are very unclear in some cases, with municipal officials offering contradictory narratives about who is responsible (National Treasury 2019).

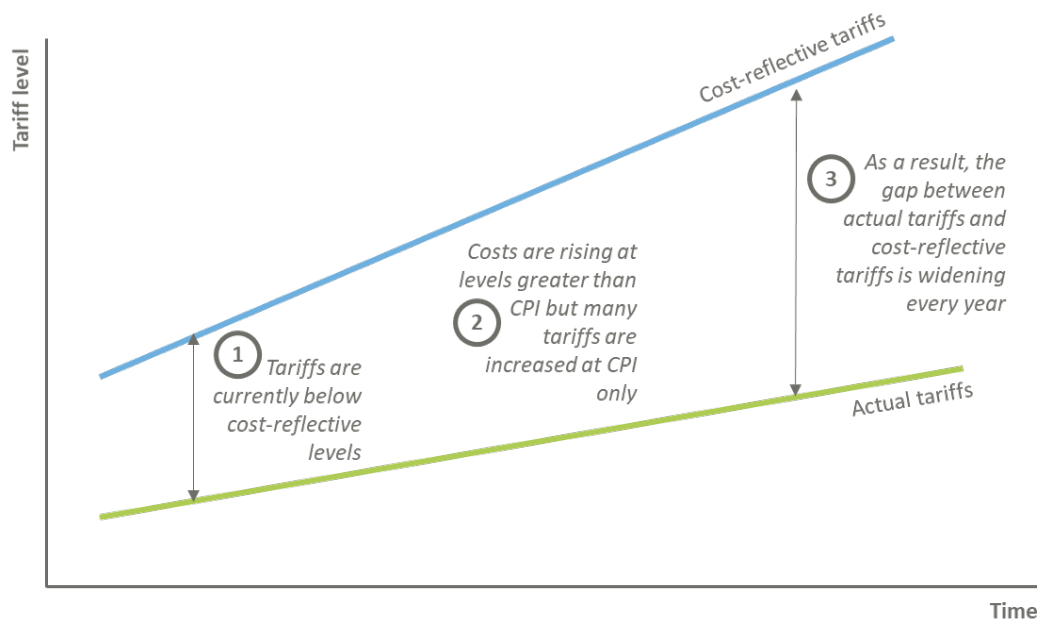
The methodology applied in setting tariffs also varies. Research conducted in the North West and Gauteng provinces found that no local municipalities in these provinces used any type of model or tool to set their water tariffs (National Treasury 2019). A relatively small number of municipalities undertook some sort of analysis to inform tariff setting, looking at growth in anticipated cost drivers or benchmarking with other municipalities. Most municipalities, however, simply adjusted tariffs by inflation only. Where there is a water board in place, most municipalities factored the bulk water price increase signalled by the water board into the tariff. Water tariffs were thus increased at a rate that blends the water board increase and CPI.

Substantial weight is given to the Municipal Finance Management Act Municipal Budget Circular distributed by National Treasury each year. This circular typically provides the anticipated CPI and stipulates that municipalities must justify any increase in tariffs greater than CPI. Many municipalities simply interpret this circular as prescribing tariff increases at CPI. Of the 24 municipalities in North West and Gauteng provinces interviewed as part of the 2019 National Treasury study, only two reported having justified increases higher than the prescribed CPI rate in their budget narratives. The situation differs somewhat in the metropolitan municipalities, which regularly approve water tariff increases above CPI.

⁶ The Department of Water and Sanitation levies a raw water charge that includes charges for water resource management, water resource infrastructure, waste discharge mitigation and water research. WSAs that treat their own bulk water will pay the raw water charge directly, so raw water is a component of their overall water distribution cost. Government-owned water boards operate some water resource infrastructure, bulk potable water supply schemes (selling to municipalities and industries), some retail water infrastructure and some wastewater systems. Nine water boards currently provide bulk water to 58 municipalities. All the metropolitan municipalities other than Cape Town and Nelson Mandela Bay are provided with bulk water by a water board. Where a WSA receives bulk water from a water board, the water board will pay the raw water charge and include it as a component in calculating a bulk water tariff. A WSA that receives bulk water from a water board will thus include the cost of bulk water in its overall water distribution cost.

The key point here is that the tariff-setting process is seldom based on an analysis of the change in the cost of providing the water service. Rather, tariffs are set within an overall budget process that considers what revenue increases are required from the budget and what tariff increases are affordable to customers or are politically acceptable to councils. As a result, there is a perception⁷ of a widening gap between the cost of supplying water and the tariffs levied, as illustrated in Figure 2.

Figure 2: Implications of current tariff-setting process for the gap between actual and cost-reflective tariffs



Source: National Treasury (2019).

South African municipalities identify the affordability of tariffs and poor revenue collection as the key barrier to improving tariff-setting processes (National Treasury 2019). They state that there is no point in undertaking rigorous analysis to demonstrate that tariffs must be increased substantially, as current tariff levels are unaffordable, and levels of non-payment are already high. However, few municipalities have conducted a rigorous assessment of tariff affordability and predominantly assume that high levels of non-payment are due to an inability to pay.⁸ They also indicate that lack of support from political leadership for revenue collection efforts

⁷ The word 'perception' is used here because there are in fact no good data on the cost of an efficient and effective water supply in most municipalities. It is thus impossible to accurately determine the extent to which tariffs are lower than this efficient, effective cost of supply. However, extensive underinvestment in the maintenance and renewal of assets and an increase in water-supply systems' failures indicate that current expenditure levels are mostly lower than required to run the water service sustainably. On the other hand, some expenditures may be bloated and inefficient. South Africa is not unusual here – a 2010 study by the World Bank found that only 36% of African water utilities surveyed were recovering their operations and maintenance costs from their tariffs, and only 9% were covering operations and maintenance plus some capital cost (Bannerjee et al. 2010).

⁸ In fact, non-payment may be due to a lack of willingness to pay, not a lack of ability to pay, with willingness to pay influenced by factors such as the quality of the service received, perceptions of trustworthiness of the municipality in using revenues appropriately, perceptions of whether others are paying and what enforcement is in place (Fjeldstad 2004).

is a key issue. Municipal officials believe that councillors trade municipal financial viability for political support when considering what tariff increases to approve (National Treasury 2019).

According to National Treasury (2019), other barriers to more rigorous tariff setting are:

- inadequacies in the budget processes that lead to a lack of data to inform proper cost determination;
- inadequacy of data on the number of customers and customer profiles, particularly concerning indigent customers who must be cross-subsidised;
- tariff-setting tools that are inappropriate for the context;
- inadequate municipal capacity to run tariff-modelling processes; and
- lack of clarity about roles and responsibilities concerning tariff setting.

Notably, the narrative here is that municipalities often inflate tariffs at CPI, but the data published by Stats SA on water price increases indicate they increased steadily above inflation between 2017 and 2022. This may be due to the sample used by Stats SA, which focuses on urban areas (metros and one or two other urban areas in each province). Metros are typically higher capacity and are therefore more likely to use an analysis of change in the water-supply cost as inputs to tariff-setting processes. At least some of them do make use of tariff-setting models or tools. All metros other than Cape Town and Nelson Mandela Bay are supplied with bulk water by water boards and will factor bulk water price increases into their tariff determination processes.⁹ The data in Table 1 show that all metros increased their water prices at an average rate well ahead of inflation between 2016 and 2021. That said, the key points about the political nature of the tariff-setting process and the fact that tariff increases are often informed more by perceptions of affordability than by changes in input costs apply to metros and other municipalities.

3. Inflation drivers

A theoretically sound water tariff-setting process would include the following steps:

- determine the cost of supply of the service, including both direct and indirect costs;¹⁰
- allow for surpluses or deficits;¹¹
- allocate subsidies and other revenues to determine the revenue required;¹² and

⁹ The lack of a comprehensive database on water tariffs means it is not possible to assess the extent to which the presence of a water board affects the final retail prices charged to customers. This may be an area for further research. Water board tariffs vary widely, as do the tariff increases they introduce each year.

¹⁰ The latter refers to a portion of municipal overheads (budget and finance department, human resources, information technology, etc.) allocated to the service. The supply cost should also include a provision for capital expenditure sufficient to allow for necessary expansions to infrastructure and the management of existing assets.

¹¹ This is somewhat controversial, but current practice in municipalities certainly includes a high degree of cross-subsidisation between services and customer groups. Some services operate at surpluses that are used to cross-subsidise losses on other services.

¹² The Local Government Equitable Share (LGES) is a substantial, unconditional annual grant provided to municipalities through the Division of Revenue Act. Municipalities also receive a range of conditional

- apply tariff structures to generate the revenue required.

Under such a process, the drivers of inflation in water tariffs would be increases in the key expenditures associated with water distribution, and changes in the quantum of grants received and the amount allocated to water. As noted in the previous section, however, the actual impact of these inflation drivers on tariff levels is sometimes delinked through the tariff-setting process, with increases ultimately coming down to perceptions of affordability. This section will nonetheless discuss trends in key inputs to a theoretical tariff-setting process that may be driving water price inflation in some municipalities, including metros.

It is important to note that municipalities report their finances for the institution as a whole,¹³ so data on municipal expenditure on individual services are typically unavailable; data on water sales volumes are similarly not available in any national datasets. As a result, data on trends in costs for the water service, specifically per kilolitre of water sold, are not available without direct collection of data from municipalities. This makes analysing municipal water business in isolation very difficult, and data quoted in this section are often for municipalities as a whole, not exclusively for the water service.

3.1 Water scarcity

Water scarcity affects pricing through two primary mechanisms. Firstly, in times of drought, municipalities typically implement water restriction tariffs. These are specifically intended to make the use of large water volumes expensive and to reduce water demand and can therefore result in very large price increases while in place.

Secondly, dealing with water scarcity over the longer term may require investment in alternative water resources. The costs of some of these resources (desalination, for example) may be significantly higher than the costs of existing resources. These costs must be recovered at least in part through water tariffs and are likely to be a driver of water price inflation in future. In its post-drought water strategy, for example, the City of Cape Town has signalled that customers should expect real increases in water and sanitation tariffs (City of Cape Town 2020).

3.2 State funding through grants

It may seem contradictory to think of trends in state funding through grants as an ‘inflation driver’ for water, but if the growth in state funding is lower than the growth in costs, the quantum of revenue that must be generated through tariffs will be higher, driving higher water tariff increases. The Local Government Equitable Share (LGES) is a substantial, unconditional¹⁴

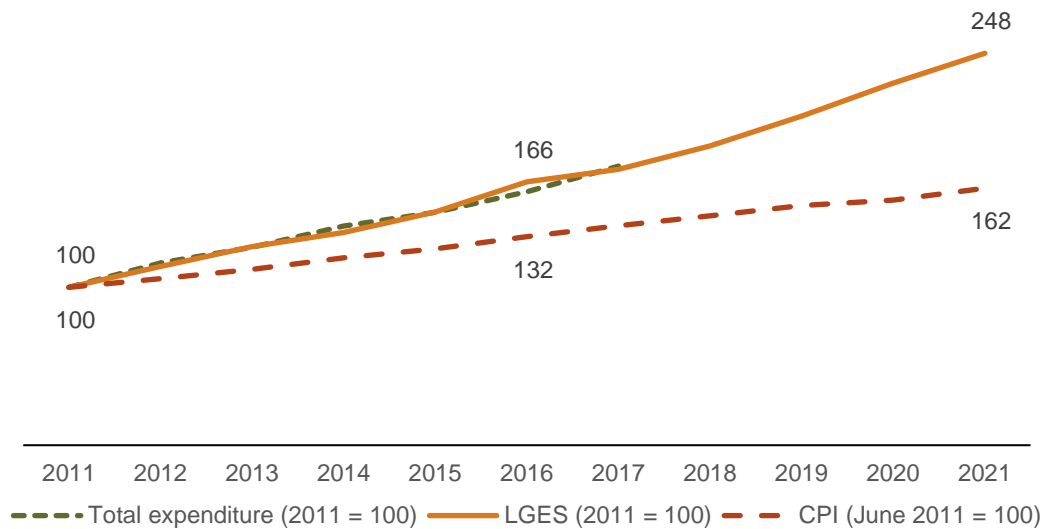
grants, largely for capital expenditure, the most significant being the Urban Settlements Development Grant, Integrated Urban Development Grant and Municipal Infrastructure Grant.

¹³ Municipalities report a breakdown of their overall expenditures and revenues by function to National Treasury, but this is not required in their audited annual financial statements. While National Treasury systems allow for the extraction of expenditure data by type (employee-related costs, etc.) for each individual function (such as water), the reporting to these systems is currently poor and the data are often not available. The ongoing roll-out of the Municipal Standard Chart of Accounts, a standardised method of recording budget and financial data that allows for the disaggregation of data in multiple ways, is intended to improve this situation. At the very least, making the ring-fenced reporting of expenditures on trading services mandatory would be useful.

¹⁴ While unconditional, it is intended to subsidise the provision of basic services to the poor.

annual grant provided to municipalities through the Division of Revenue Act. Figure 3 shows that LGES allocations to all municipalities combined have increased at a rate well above inflation over the past 10 years.¹⁵

Figure 3: Growth in LGES allocations to all municipalities combined compared to growth in CPI and growth in total municipal operating expenditure between 2011 and 2021¹⁶



Source: Author’s analysis of municipal expenditure data from National Treasury Municipal Budget Reporting and Reform (MBRR) A2 tables for all municipalities combined for 2015, 2018 and 2021 Medium Term Revenue and Expenditure Frameworks (MTREFs); LGES data from the Division of Revenue Acts for the relevant years; and CPI year on year (y-o-y) for June each year as reported by Stats SA.

It is also notable that growth in total operating expenditure by municipalities has tracked LGES growth almost exactly. The close tracking of total municipal expenditure with LGES allocations indicates that the portion of expenditures covered by the subsidy has remained largely fixed over the period, and declining LGES allocations have therefore not been an inflation driver for water prices over the past 10 years.

Municipalities often report that the number of poor households to which they must provide subsidised services has grown and that subsidy allocations are increasingly inadequate to cover the costs, but there are currently insufficient data to determine the accuracy of this

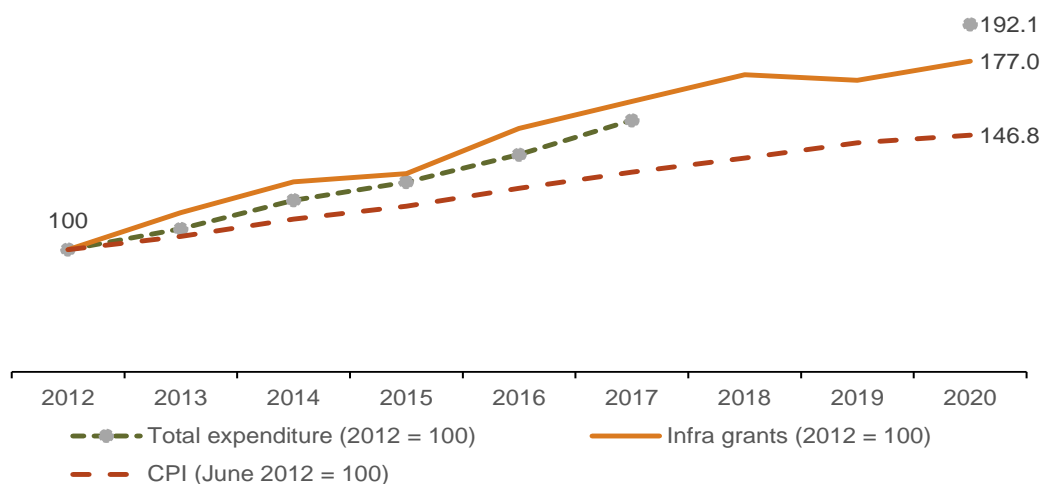
¹⁵ Because the LGES is unconditional, municipalities can allocate it between functions as they see fit. The quantum of LGES received by the municipality and the quantum they choose to allocate to water will significantly influence the amount of revenue that must be generated through tariffs. However, increasing the quantum of LGES allocated to water means reducing the quantum allocated to other functions, thus driving up the tariffs for those functions. Municipalities are not required to report on how much LGES they allocate to each function. The data shown here are for total LGES allocations and not for allocations made to water specifically.

¹⁶ The Municipal Standard Chart of Accounts of 2018 introduced changes to how municipalities report to National Treasury. This led to inaccuracies in reporting for 2018 and 2019, and data for these years has been omitted from all expenditure trends presented in this report.

assertion.¹⁷ There has certainly been upward pressure on the level of subsidy required in the form of free basic water (FBW), and many metropolitan municipalities have increased the volume of FBW.¹⁸

A similar analysis for infrastructure grants shows that these grew well ahead of inflation until 2018, though less rapidly than the LGES. Growth in infrastructure grants has slowed somewhat since 2018 but dropped below growth in expenditures. Declining growth in infrastructure grants may be placing upward pressure on water prices, as municipalities need to increase tariffs to fund capital expenditure.

Figure 4: Growth in infrastructure grant allocations to all municipalities combined compared to growth in CPI and growth in total municipal operating expenditure between 2011 and 2021



Source: Author's analysis of municipal expenditure data from National Treasury MBRR A2 tables for all municipalities combined for 2015, 2018 and 2021 MTREFs; infrastructure grant data from the Division of Revenue Acts for the relevant years; CPI y-o-y for June each year as reported by Stats SA.

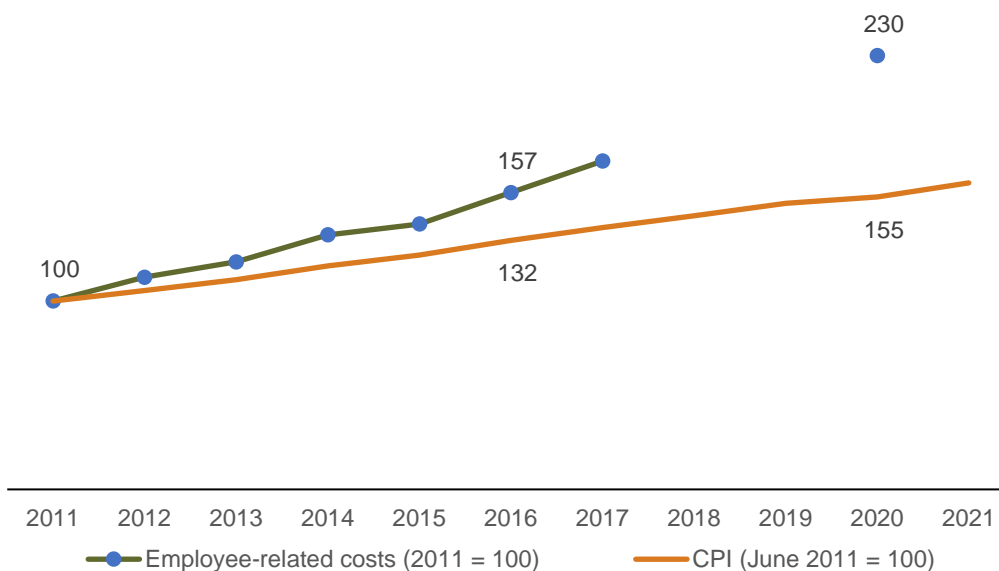
¹⁷ LGES allocations are calculated on an estimated number of poor households in each municipality, which has remained fixed since the last census in 2011. The extent to which the number of indigent households has grown will not be known until the results of Census2022 become available. Data on the number of registered indigents in municipalities, as reported in Stats SA's annual Non-Financial Census of Municipalities, indicate that the number of indigent households registered in all municipalities has remained largely static since 2011. This is likely to say more about processes of indigent registration in municipalities than actual numbers of indigent households.

¹⁸ Policy in South Africa requires that 25 litres per person per day or 6 kilolitres (kl) of water per household per month are provided free by municipalities. This volume has been challenged as inadequate (see, for example, Mazibuko (2006)). Free amounts provided to registered indigents are between 10 kl and 15 kl in Johannesburg (depending on assessed level of indigence), 12 kl in Tshwane, 10.5 kl in Cape Town, 10 kl in Mangaung, 9 kl in Ekurhuleni and 8 kl in Nelson Mandela Bay. The other metros provide 6 kl, as required by national policy.

3.3 Employee-related costs¹⁹

Employee-related costs have increased significantly faster than headline inflation over the past 10 years, as shown in Figure 5. Employee-related costs comprise about 28% of total municipal operating expenditures and are a significant driver of increases in the cost of providing municipal services.

Figure 5: Growth in employee-related costs by all municipalities combined compared to growth in CPI between 2011 and 2021



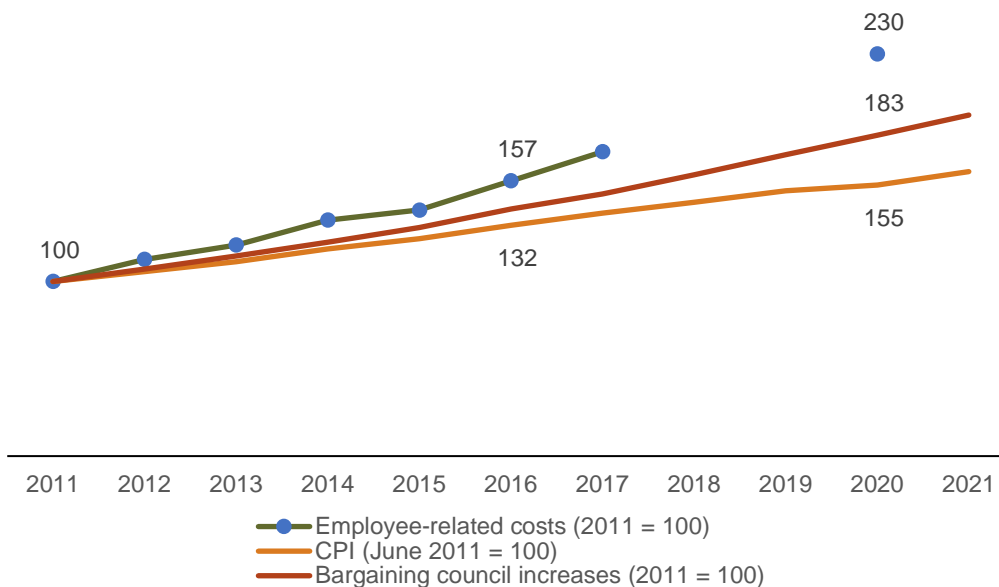
Source: Author's analysis of municipal expenditure data from National Treasury MBRR AA tables for all municipalities combined for 2015, 2018 and 2021 MTREFs; CPI y-o-y for June each year as reported by Stats SA.

Employee-related costs are set through two salary processes. Upper limits on salaries for municipal managers and managers who report directly to municipal managers are set by the Minister of Cooperative Governance and Traditional Affairs each year. The Minister sets a range for these senior management salaries so that salaries can be moved within the range, but the upper limits for senior management salaries have not been increased since 2019.

Salaries for other municipal staff are set through a collective bargaining process in which the South African Local Government Association (SALGA) bargains on behalf of local government. These increases are typically ahead of inflation, and above-inflation increases in salaries negotiated through the collective bargaining process have been a long-term driver of high growth in employee-related costs. However, as shown in Figure 6, employee-related costs have grown even more rapidly than wages negotiated through the bargaining council.

¹⁹ Unless specifically indicated, all data reported in this sub-section on employee-related costs are for municipalities as a whole and not for the water service in particular. This is because the water service is not ring-fenced, and reporting on expenditures incurred in providing water specifically is poor.

Figure 6: Growth in employee-related costs by all municipalities combined compared to growth in CPI and salary increases negotiated in the bargaining council between 2011 and 2021



Source: Author’s analysis of municipal expenditure data from National Treasury MBRR AA tables for all municipalities combined for 2015, 2018 and 2021 MTREFs; CPI y-o-y for June each year as reported by Stats SA; personal communication on bargaining council increases.

Stats SA (2015) has suggested that increases in staff numbers to improve service delivery has been a further driver of high increases in employee-related costs, but analysis presented in reports such as the biennial State of City Finances reports published by the South African Cities Network (SACN) suggests that employee-related costs per employee have been rising rapidly and that growth in the number of employees in the metros has not been significant (SACN 2020 and 2022).

Employee-related costs include staff benefits and bonuses, as well as the costs of overtime. While good data on these expenditures are not available, interviews with metros reported in the State of City Finances reports indicate that very high levels of overtime are a key driver of high employee-related costs, as are allowances for items such as cars and housing, which are often high and sometimes provided incorrectly (SACN 2022). Once provided, however, these allowances are very difficult to withdraw.

In general, the rapid growth rate in employee-related costs has been due to the significant labour power in bargaining council negotiations and in resisting the control of items such as overtime, bonuses and allowances. Recent signs suggest that this is shifting, with the Minister of Cooperative Governance and Traditional Affairs not increasing the upper limits of senior-management salaries since 2019. The Constitutional Court ruling in February 2022 that the state can renege on collective wage bargaining agreements if they are not affordable is also significant in this regard, as is strong messaging from the Minister of Finance on the unaffordability of the public sector wage bill.

3.4 Bulk water

Bulk water is a large proportion of total expenditure for most of the 58 municipalities that receive bulk water via a water board. The share of bulk water purchases in total water services expenditure differs significantly, from only 7% of reported water expenditure in Mantsopa local municipality to as much as 70% in the City of Tshwane (Palmer Development Group’s own calculations based on municipal budget data for 2021). To some extent, this is due to differences in how municipalities allocate expenditures between the various services they provide. Johannesburg Water, which produces ring-fenced financial statements, reported that 50% of its expenditure was on bulk water purchases in 2021.

As noted in Section 2, nine water boards currently operate in South Africa. Section 42 of the Municipal Finance Management Act states that Parliament must approve proposed bulk tariff increases based on a recommendation from the Minister of Water and Sanitation after comment from SALGA and National Treasury. There is wide variation in the approved bulk tariff increases requested by water boards, as shown in Table 3.

Table 3: Approved bulk tariffs per water board for 2017/18 to 2021/22 and proposed tariffs for 2022/21, in rands per kl

	2020/21	2021/22	2022/23
Amatola Water	0.0%	9.9%	5.7%
Bloem Water	0.0%	11.0%	9.0%
Lepelle Northern Water	0.0%	7.0%	9.7%
Magalies Water	0.0%	13.1%	12.2%
Mhlathuze Water	0.0%	7.7%	10.1%
Overberg Water	0.0%	55.9%	8.0%
Rand Water	0.0%	5.8%	8.8%
Sedibeng Water	0.0%	15.9%	6.6%
Umgeni Water	0.0%	27.6%	3.7%
Weighted average ²⁰	0.0%	10.6%	7.8%
CPI	2.2%	4.9%	7.4%

Source: Personal communication, James Matsie, SALGA.

Despite inputs from SALGA suggesting revisions to tariff increases proposed by the water boards, the Department of Water and Sanitation has in most cases simply approved the tariff increases requested by water boards – or approved zero increases across the board, as in 2020/21. This suggests an inadequate capacity to regulate these tariffs.

²⁰ Weighted according to anticipated sales volumes in 2022/23. 58% of sales are by Rand Water and 20% by Umgeni Water. The share of the other water boards in sales is 5% or less, with Overberg notably the smallest, selling only 0.1% of total sales.

3.5 Electricity²¹

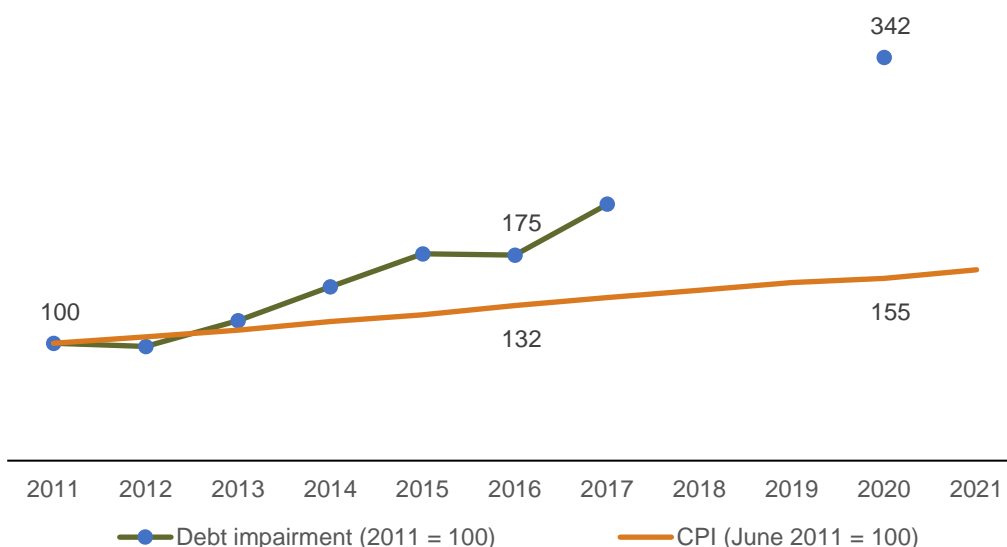
Electricity is a key input for treating bulk water to potable standards. Water boards report that electricity makes up between 13% and 26% of their total budgeted expenditures for producing bulk water for 2022/23 (Palmer Development Group analysis of water board budget data). Given the share of bulk water purchases in total water expenditures, electricity contributes about 5% to 15% of the total cost of water supply.²²

While the cost of electricity is a relatively small portion of the total cost, it has increased significantly over the past 10 years and is a key driver of inflation in water prices. WSAs can do little to mitigate this beyond ensuring that their water pumping and treatment are as energy efficient as possible.

3.6 Debt impairment

Municipalities report on an accrual basis, reporting revenues when they are billed, not when they are paid. Debt impairment is a non-cash expenditure item used to make provision for the fact that some billed revenue will have to be written off. As shown in Figure 7, debt impairment expenditure has been growing more rapidly than CPI since 2013 and very rapidly since 2016.

Figure 7: Growth in debt impairment expenditure by all municipalities combined compared to growth in CPI between 2011 and 2021



Source: Author's analysis of municipal expenditure data from National Treasury MBRR AA tables for all municipalities combined for 2015, 2018 and 2021 MTREFs; CPI y-o-y for June each year as reported by Stats SA.

²¹ Most electricity expenditure incurred in providing water is associated with pumping and treating bulk water. For those municipalities that receive water from a water board, most electricity expenditure is therefore incurred by the water board and not the municipality itself. For municipalities that treat their own bulk water, the electricity cost reflects on the municipal account.

²² These percentages are very variable given the significant differences in the overall cost structures of water supply in different municipalities.

As reported in the 2022 iteration of the State of City Finances report, debt impairment expenditure in the eight metros and Msunduzi Local Municipality as a group increased by 42% from 2019 to 2020. This was the most significant single impact on municipal finances to result from the COVID-19 pandemic. In many municipalities, councils halted debt collection and credit control measures entirely during the pandemic, and data reported by the Financial and Fiscal Commission (2021) show that cash collection rates declined by between 5% and 10% across all municipal categories. Data suggest that debt impairment declined marginally in 2021 but remained high. The extent to which municipalities will be able to reintroduce credit control mechanisms and improve cash collection rates (and therefore reduce the need for debt impairment) going forward is unknown.

Debt impairment is an expenditure item for municipalities, and tariffs must be increased to cover this. This can result in a dangerous downward spiral: customers do not pay, so debt impairment rises, tariffs increase and become less affordable, and levels of non-payment rise further.

3.7 Asset management

Asset management here refers to both the operating and capital expenditures required to invest in new assets to allow for growth and to ensure that existing assets remain in sufficiently good condition to continue to provide services. Sound asset management requires adequate operating expenditure for the maintenance of assets and capital expenditure for both new assets and the renewal of existing assets. There is ample evidence of inadequate asset management by South African municipalities, including of water assets.²³

Under-expenditure on the expansion, maintenance and renewal of assets means that this has not been a significant driver of inflation in water prices over the past 10 years, but this under-expenditure has taken its toll on infrastructure. The under-maintenance of assets results in a decline in asset condition and increases the need for higher levels of unplanned maintenance and asset replacement. Historic under-investment in asset management is thus anticipated to be a key driver of the need to increase water prices in future to allow for ongoing expansion, maintenance and renewal, and to make up for the significant backlog that now exists in these expenditures.

²³ The South African Institute for Civil Engineering Infrastructure Report Card for 2017 gave bulk water resources infrastructure and water supply infrastructure in non-urban areas a D- score, indicating that the infrastructure was at risk of failure. Water supply infrastructure in urban areas received a C+ score, indicating 'satisfactory for now' (Pautz et al. 2017). The report highlighted that budgeting and spending on maintenance, rehabilitation and expansion remained inadequate. The Auditor General made specific findings related to the state of municipal infrastructure in his consolidated report on local government in 2020. Data from the 2019 General Household Survey conducted by Stats SA showed that a quarter of South Africans (25%) reported some interruptions to their water supply in that year (interruptions being defined as lasting more than two days, or shorter interruptions experienced on more than 15 days in the previous year).

3.8 Non-revenue water

Non-revenue water (NRW) is the difference between the volume of water purchased from a water board as raw water and the volume of water sold to customers. NRW comprises so-called ‘technical’ losses, which are losses due to factors such as leaks or burst pipes, and non-technical losses, which are due to unidentified or misallocated water use or inaccuracies in recording water use. Technical losses are often related to infrastructure condition, while non-technical losses include water theft and water provided to customers free of charge.

The last rigorous analysis of South African NRW was by McKenzie et al. in 2012. This analysis found that the average level of NRW in South Africa at the time was 36.8%, which was not far off the world average, but that the best-performing countries had NRW levels of 7% or 8%.

Reporting by municipalities on NRW is inconsistent, but some data are included in the notes to their annual financial statements. Where available, these data are shown for the metropolitan municipalities in Table 4.

Table 4: Non-revenue water percentages in the eight metros in 2011, 2016 and 2021²⁴

	2010/11	2015/16	2020/21
Johannesburg	39.1%	22.6%	39.4%
Cape Town	22.2%	12.8%	15.9%
eThekweni		40.7%	48.9%
Ekurhuleni	29.6%	34.0%	32.7%
Tshwane			34.6%
Nelson Mandela Bay	26.2%	41.4%	40.0%
Mangaung			
Buffalo City		41.0%	36.3%

Source: Notes to city annual financial statements 2010/11, 2015/16 and 2020/21.

The data indicate that levels of NRW have remained high and increased substantially in some metros. Increasing levels of NRW are a driver of inflation in water prices, as they increase the volume of bulk water that must be purchased or treated and decrease the volume of water sold, meaning costs must be recovered from a smaller sales volume.

4. Reforms currently under way through Operation Vulindlela

Before turning to recommendations, it is important to note that several reforms are currently being implemented through Operation Vulindlela²⁵ that relate to water pricing (National Treasury 2020):

- **Strengthening regulation of water pricing and service standards** by reviving Green Drop, Blue Drop and No-Drop water quality monitoring programmes and establishing an independent economic regulator. The latter is intended to “ensure

²⁴ Blank entries indicate data not available in the annual financial statements in that year.

²⁵ Operation Vulindlela is a joint initiative of the Presidency and National Treasury aimed at fast-tracking the delivery of economic reforms.

rational pricing” of water. Progress reporting at the time of writing indicates that this was “underway” (National Treasury 2022).

- **Finalise and implement the revised raw water pricing strategy** to “ensure accurate and fair water pricing according to the user-pays principle” (National Treasury 2022). The revised strategy was published in August 2022.
- **Address institutional efficiencies in municipal water and sanitation services** by implementing a comprehensive national programme to support municipalities in improving water services performance. This is relevant to water pricing, as this intervention’s problem statement includes weak revenue collection and asset management, both mentioned as inflation drivers in this report. Progress reporting indicates that this will be achieved by, among other things, “providing hands-on support directly to municipalities that fail to meet (more comprehensive) norms and standards for water and sanitation” (National Treasury 2022). This latter is a significant task, but there has been little observable progress to date.

5. Recommendations

The **strengthening of economic regulation** of water pricing is a key requirement for improved water pricing and is currently being addressed through Operation Vulindlela. In particular, it is recommended that guidelines be developed for setting bulk water prices and that the regulation of these prices be improved.

It is also recommended that a **publicly accessible database of water tariffs** be established to allow for the transparent comparison of tariffs between municipalities and over time.

Economic regulation can be supported by introducing a **requirement for separate financial reporting** for each municipal trading service, including water. This will allow for a better understanding of changes in cost drivers for the water service in isolation from other municipal functions. Such separate financial reporting should include an allocation of municipal overheads to the water service.²⁶

With regard to inflation drivers for retail water tariffs:

- Municipalities must be supported to **contain employee-related costs** as a matter of urgency.
- Municipalities must reintroduce debt collection and credit control measures and **contain increases in debt impairment**. This must be accompanied by careful indigent management to ensure that subsidies are accurately targeted to those that need them.
- Municipalities must **contain and reduce the levels of non-revenue water**. This may require up-front funding support linked to sound asset management (discussed below).

²⁶ Note that this recommendation does not suggest that cross-subsidisation between the water service and other municipal services should be eliminated. It suggests only that financial reporting should be clearly ring-fenced so that the level of cross-subsidisation is made more explicit.

- Funding freed up through these interventions should be directed to **improved asset management**, particularly the maintenance and renewal of infrastructure, to ensure that it remains in adequate condition to provide services on a sustainable basis.

Many of these interventions, particularly those related to employee-related costs and debt collection and credit control, are likely to face resistance and require strong political support.

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Annexure

Tariff structure definitions and example

WSAs charge different tariffs for different customer types. It is not unusual for a WSA to have 20 or more water tariffs in place in a particular year. The structure of these tariffs differs, meaning that customers on the same tariff may pay a different average price per kilolitre of water consumed.

A range of approaches to structuring tariffs is used among WSAs: some charge fixed charges and some do not; different sizes are used for the blocks in an inclining block tariff (IBT); and different structures are applied for industrial, commercial and institutional tariffs. Domestic water tariffs are most commonly structured as a fixed charge together with an IBT, while industrial, commercial and institutional tariffs are typically flat-rate tariffs.

A **fixed charge** is a fixed monthly amount charged to a customer regardless of the volume of water consumed. It may vary according to the size of the connection (in other words, it may vary from customer to customer), but it remains fixed for each customer over a municipal financial year.

A **flat rate** is a volumetric tariff. It is a price per kilolitre that does not vary with the volume of water consumed.

An **IBT** is a volumetric tariff structure. It is a price per kilolitre of water consumed that increases as the volume consumed increases. It is structured in 'blocks', with each block covering a range of consumption at an increasing rate.

Applying an IBT means that the average cost per kilolitre charged to a domestic customer that uses a large volume of water is greater than that for a customer who uses a small volume. However, the inclusion of the fixed charge can reverse this effect at low volumes consumed.

Example of water tariffs in the City of Cape Town in 2020/21

The domestic water tariff in the City of Cape Town in 2020/21 was structured as follows:

A fixed monthly charge of R70.66.

A price of R17.37 per kl for up to 6 kl of water consumed.

A price of R23.87 for water consumed in excess of 6 kl, up to 10.5 kl.

A price of R32.43 for water consumed in excess of 10.5 kl, up to 35 kl.

A price of R59.85 for water consumed in excess of 35 kl.

The bill for a **domestic customer using 6 kl of water** would be $R70.66 + 6 \text{ kl} \times R17.37 = R174.88$. The average price per kl for this customer is **R29.15**.

The bill for a **domestic customer using 15 kl of water** would be $R70.66 + 6 \text{ kl} \times R17.37 + 4 \text{ kl} \times R23.87 + 5 \text{ kl} \times R32.43 = R432.51$. The average price per kl for this customer is **R28.83**.

Example of water tariffs in the City of Cape Town in 2020/21

The bill for a **domestic customer using 40 kl of water** would be $R70.66 + 6 \text{ kl} \times R17.37 + 4 \text{ kl} \times R23.87 + 25 \text{ kl} \times R32.43 + 5 \text{ kl} \times R59.85 = R1\ 380.36$. The average price per kl for this customer is **R34.51**.

Indigent households did not pay the fixed monthly charge, nor were they charged for any water up to 10.5 kl. **Indigent households consuming 6 kl, 15 kl and 40 kl** of water thus paid average prices of **R0.00 per kl, R9.73 per kl and R27.34 per kl respectively**.

Commercial and industrial customers paid a 'flat rate' tariff of **R31.10 per kl** regardless of volume consumed. The same tariff was charged to schools, sports bodies, religious institutions and charities.

In sum, the 'price' of water to a customer in Cape Town ranged from zero to over R30 per kl depending on the type of customer and the volume of water consumed.

WSAs typically increase the fixed and volumetric charges by the same percentage each year, but this is not always the case. They may increase the fixed charge by a larger or smaller percentage; they may apply different percentage increases to different tariff blocks within an IBT structure; they may apply different percentage increases to different customer types. Occasionally, they restructure the tariffs entirely, introducing or removing fixed charges or changing the sizes of blocks in an IBT. All these changes will affect the average price per kilolitre.

To overcome these difficulties, water prices are typically compared using one of two methods. The first method is to calculate the average tariff for the whole WSA. This is done by dividing the total revenue generated by all water tariffs by the total volume of water sold. This requires data on tariff revenues and sales volumes, but the latter are not readily available in South Africa. The second method is to compare the price per kilolitre for a selected customer type and level of consumption – for example, to compare the price of 15 kl of water to a domestic customer between WSAs or over time.